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East Europe Report

SCIENCE AND TECHNOLOGY

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EAST EUROPE REPORT

SCIENCE AND TECHNOLOGY

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INTERNATIONAL AFFAIRS

BERLIN-MOSCOW SCIENTIFIC DATA TRANSMISSIONS BEGUN

East Berlin NEUES DEUTSCHLAND in German 21 Jan 85 p 2

[Article signed 'R. Z.': "Berlin-Moscow in Seconds; Data Telecommunication Intensifies CEMA Cooperation in Science and Technology"]

[Text] Telecommunication of data between the GDR Central Institute of Information and Documentation in Berlin and the International Center for Scientific and Technical Information in Moscow, now in test operation, allows sending scientific and technical information in seconds. With that, a major step has been taken in further intensifying cooperation among the CEMA countries in the field of international exchange of information.

The current experiments in data telecommunication are aimed at enabling research for information, which is needed, for example, by engineers, scientists and managers from industry, research institutes or state agencies of our country, to be performed in future by using modern video terminals in the interactive mode. In this way, it will be possible to communicate and make usable for the solution of certain problems the latest scientific and technical discoveries from the USSR and other CEMA countries as well as from all the international technical literature much faster and more efficiently than before. Data telecommunication is a prerequisite for expanding the current International System for Scientific and Technical Information of CEMA Countries into a network of information services and data banks with direct access and faster availability of the literature. The countries involved in this are analyzing the technical knowledge published in the world, based on a division of labor, and making the information obtained this way, including their own scientific discoveries, available to each other. This concerns annually some two million scientific articles from more than 30,000 international technical periodicals, 800,000 patent specifications as well as research efforts, university publications and technical books.

Creating the physical, technical and organizational prerequisites needed to build a network of information services and data banks is underway in this five-year plan. Calculating on an international basis, an information system organized like this enables a some 30-percent reduction in time spent on research and development and a 20-percent increase in efficiency.

The leading institution in building such a network is the International Center for Scientific and Technical Information in Moscow. Experiments in interactive operation with video terminals have already been performed in the last two years together with the Institute of Information and Documentation of the Cuban Academy of Sciences and the central information institutes of Bulgaria, the CSSR and Vietnam. In the process, both satellite and telephone network communication using CEMA equipment was used.

The tests on data communication between the centers in Berlin and Moscow successfully conducted so far also fit into this framework. Other GDR institutes which will have direct access to the data banks of the international center in the near future are the Scientific Information Center of the GDR Academy of Sciences and the Central Information Institute of the Chemical Industry.

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CSO: 2302/64

INTERNATIONAL AFFAIRS

GDR-CSSR COMPUTER COOPERATION DESCRIBED

East Berlin RECHENTECHNIK/DATENVERARBEITUNG in German Vol 21 No 12, Dec 1984 p 35

[Editorial staff interview with Dr Juraj Nemes, Main Department Head, Datasystem Export- Import Enterprise, CSSR]

[Text] [Question] CSSR computer hardware has a good reputation in the GDR. Some examples are the SM 4-20 small computer, the EC 1026 and the Digigraf plotters. Who developed and produced the hardware in the CSSR?

[Answer] In the CSSR, the Prague ZAVT is responsible for development and production of computer and automation equipment. Some 55,000 employees work at the ZAVT. The enterprise includes nine production plants. Unified System equipment, for example, is made at the Cernovice ZPA and the SM 4-20 computer system, at the Banska Bystrica ZVT. Three research institutes carry out the necessary research and development efforts: the Institute for Automation Equipment in Prague (VUAP), the Institute for Mathematical Machines in Prague (VUMS), and the Institute for Computer Hardware in Zilina (VUVT).

There are also two specialized organizations, Kancelarske stroje in Prague and Datasystem in Bratislava, which handle delivery and installation among other things.

[Question] In the GDR, a larger number of SM 4-20 computers from the CSSR are being used in the most varied areas. What is of interest for the GDR user in the way of new and further developments in the System of Small Computers?

[Answer] Most users of SM 4-20 computers in the GDR are engaged in science, universities, health and the printing industry. The fiftieth computer of this type for the GDR will be delivered before the end of this year.

Our latest development in the System of Small Computers is the SM 52/11, exhibited at the 1984 Leipzig Spring Fair. Compared to the SM 4-20, the major improvements are higher operating speed, the capability of expanding main storage to a maximum of 4M bytes and extensive diagnostic capabilities.

We hope to be able to deliver the first two systems of the new type to the GDR in the beginning of 1985.

[Question] Users require more and more good software. How do you stand with this requirement?

[Answer] In our opinion, the future lies with small computers and this naturally includes software support too. We try to fully supply our customers, even with applications engineering services. In doing so, we use two ways: On the one hand, we, i.e. the specialized organizations Datasystem and Kancelarske stroje, ourselves develop software for the user. On the other hand, we subcontract to organizations which likewise develop software themselves and retain the right to further market the software produced.

In the future, we would like to export more software since we believe that supplying just hardware is outmoded today already.

[Question] Have you already exported software to the GDR?

[Answer] Surely you are aware that many copies of the DOS/3 from the CSSR are in use for the Unified System computers in the GDR.

[Question] For which applications do you directly develop software?

[Answer] We have been working in the field of small computers for a long time, e.g. in software for the fields of graphics; education; agriculture, software for management of a large socialist agricultural enterprise, including programs for agronomy and zoology; and health.

[Question] Thank you for the interview.

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COMPUTERS AT BRNO INTERNATIONAL MACHINE FAIR

East Berlin RECHENTECHNIK/DATENVERARBEITUNG in German Vol 21 No 12, Dec 1984 pp 34, 36

[Article signed 'Pa.']

[Text] At the 26th International Machine Fair in Brno from 12 to 19 September 1984, there were 2,488 exhibitors from 30 countries, 240 more than last year. The higher number of exhibitors indicates the internationally increased interest in this fair. Thus, besides the CSSR KOVO foreign trade enterprise, numerous well-known computer hardware manufacturers were represented. Because of the large amount of hardware exhibited, we want to give priority to the Czechoslovakian exhibits. Also, KOVO, which as an exporter represents more than 70 Czechoslovakian manufacturers not just in the field of data processing, offered numerous new computer hardware products this year.

Graphics Systems. Graphics systems in the most varied versions were clearly dominant. The graphics display with a 512 x 512 point screen is based on SM 4-20 components. (fig. 1. [not reproduced]) The GRM 3401 video display allows display of 16 colors. The SM 7202 MI alphanumeric terminal is used for user communication with the system. An interactive graphics system based on SM 4-20 components is shown in fig. 2 [not reproduced]. The display with a light pen has a 1024 x 1024 point screen and 8 intensity levels of graphics. Curve lengths of 120 m should be able to be displayed on the screen in 20 ms.

The SM 50/40-1 ZVT TS terminal station is equipped with a Robotron 1152 printer (fig. 3 [not reproduced]). As the designation indicates, this system is based on the standardized SM 50/40 microcomputer system. The station can operate alone or be connected to a higher computer; at the fair, this was the SM 52/11.M1

The terminal station was developed by the Zilina VUVT Research Institute and made by the Banska Bystrica ZVT.

The SM 52/11.M1 computer in the Small Computer System, Series III, was shown as a graphics system with an appropriate configuration (fig. 4 [not reproduced]). The system shown had 1M bytes of main storage; it can be expanded to 4M bytes. Various operating systems are available as a function of the application. The configuration also includes the model 930 drum plotter (!). Drawing, ball or felt-tip pens with three different colors are used to plot on continuous paper with perforation on the sides for the tractor. Maximum drawing width is 860 mm. A programming section is 0.05 mm; drawing precision is 0.1 mm. Plotter dimensions are 1,500 x 470 x 320 mm; weight is 55 kg.

Also as a new product, the Cakovice ZPA exhibited its IGS 4720 interactive graphics station with color monitor. Seven colors are available on the 512 x 512 point screen. The 16-bit microcomputer in the system has an operating speed of 320 ns and RAM size from 256K to 1M bytes. The IGS 4720 can be used for CAD/CAM.

Printers. An interesting new development in printers is the EC 7140 electrostatic alphanumeric parallel printer by the Kosire ZPA, Jinonice Werk (fig. 5 [not reproduced]).

The printer supports output of alphanumeric and graphic information. It interfaces with Unified System and Small System computers, and is intended for interactive graphic systems, e.g. for the IGS 4720 mentioned earlier. It works on the electrostatic principle; thus, special paper is required and only single copies can be made. The printer produces 222 different graphic symbols at a rate up to 1,000 lines per minute [lpm] with a paper width of 380 mm.

The EC 7039 chain printer has been upgraded. The higher speed, greater precision and simpler operation led to the additional designation M 1. The EC 7039 should already have been delivered to the GDR.

Educational, Personal and Office Computers. KOVO allotted more space to educational, personal and office computers. Thus, several types of educational microcomputers were shown by the Novy Bar ZPA and Banska Bystrica ZVT. The common base for all the educational computers is the MHB 8080 microprocessor. Maximum memory in each device is 64K bytes.

The SMEP PP01, PP02, PP03 personal computers have the MHB 8080 A as the microprocessor and offer either a black and white or color monitor. Mikros, which is CP/M compatible, is used as the operating system when disk drives are connected. The 16-bit PP04 computer with 96K-word RAM is considered a great new product. The PP04 is based on SM 4-20 computer system components. The device can be expanded with the GRM 4311C color monitor and CSSR floppy drives with a formatted capacity of 2M bytes (double-sided diskettes).

The TEXT01 office computer for word processing was developed at the Zilina Institute of Computer Technology. It was made by the Prague ARITMA.

The configuration includes a screen which displays Latin letters and the special characters required for the Czech and Slovak languages, two floppy drives with a 256K-byte capacity each and a Robotron 1152 printer.

An interesting product from the field of mobile data acquisition hardware by the Bulgarian Institute of Software Products and Systems Corporation (SPS Corp.) should be mentioned: the PIT1 programmable intelligent terminal with 32K bytes each of RAM and ROM has an alphanumeric keyboard and an LCD display. This 1-kg terminal is to be in series production in Plowdiv in 1985. With the device, data can be acquired at the site of origination and then processed further on a larger computer. The acquired data can be transmitted e.g. through a direct connection or an acoustic coupler.

Applications Software. Not just hardware, but applications software too was offered at the 26th Brno International Machine Fair. The Czechoslovakian foreign trade enterprise Polytechna, responsible for software export and import among other things, offered a number of software packages, e.g. a program for scheduling physicians and nurses for public health for a Small System computer and a finite element software package for statics computation.

Kovoprojekt of Bratislava demonstrated operation of its AMOS CAD/CAM system in hall D. It can be used to economically design both workshops and jeans with the most economical usage of material.

The Videoton AG of the Hungarian VR [People's Republic] offered its system for preparation of manufacturing processes, which runs on a EC 1011 or compatible successor. This project was developed together with a GDR combine and is there a component of a complex rationalization task for the entire manufacturing organization.

As new products in the CSSR, the Robotron Combine showed the EFBM 1715 electronic accounting and invoicing machine and the DIS A 6422 data information system.

PHOTO CAPTIONS

1. p 34 Fig. 1. Graphics display
2. p 35 Fig. 2. Interactive graphics system based on the SM-4-20
3. p 35 Fig. 3. Terminal system based on the SM 50/40
4. p 35 Fig. 4. SM 51/11.M1 as a graphics system
5. p 35 Fig. 5. EC 7145 alphanumeric parallel printer

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SOVIET COMPUTERS EXHIBITED

East Berlin RECHENTECHNIK/DATENVERARBEITUNG in German Vol 21 No 12, Dec 1984 p 2

[Text] In October 1984, the Elektronorgtekhnika (Elorg) had a small specialized exhibit of microcomputers compatible with the Unified System and System of Small Computers and of microelectronic components in the permanent export model show in the House of Soviet Science and Culture on Friedrichstrasse in Berlin. In addition to the SM 1300 already shown at the LFM '84 [1984 Leipzig Spring Fair], two systems in the Elorg exhibit were of special interest.

Iskra 226

This microcomputer with 64K bytes of ROM, terminal and attached keyboard was exhibited in the configuration with the SM 5400 (disk drive unit/WPS [moving head disk]), SM 5300.1 (magnetic tape drive), EC 5074 (4MB diskette storage unit with EC 5274 8-inch diskettes by Iskra and two drives), H306 plotter (indelible pen plotter, multicolor, fast/slow speed select with identical plotting precision, and ENDIM analog structure) and Robotron 1154 printer.

The computer operates with, among others, BASIC; it can be used alone or connected to the SM 1300 and Unified System computers.

The computer capabilities for processing graphics information (three-dimensional graphics) and drawing, from a circuit diagram to a biorhythm program on a diskette, were demonstrated. A visitor could get his daily "condition" for a year of his choice on the printer. For this, one had to input his date of birth; the computer determined the forecast of conditions by months and days for the year selected. Readable by day and month were: high, critical and low performance (in rows), constructed according to energy, reaction capability and memory performance (in columns).

YeS 7970 Multicomputer System

The TC 7063.01 terminals from this linked system were exhibited. In addition to the satellite computer function, up to 32 of these terminals to can be connected to Unified System computers, series 2 or 3. The TC 7971 control computer which can be installed up to 60 m away from the Unified System computer is intended especially for data telecommunication (DFUe).

The TC 7063.01 can be installed up to 2,000 m away from the control computer. The system can run FORTRAN, BASIC and Assembler among others. Up to eight terminals can be connected through the operator console, installable separately, of each terminal, in which the main storage (32K bytes of ROM, 8K bytes of RAM) is also housed. The TC 7971 simultaneously controls data traffic with a maximum of four TC 7063.01 terminals. A processing speed of 10K bytes/s is ensured (KOI-8 code, Unified Computer System interface) through an I/O channel in a connection to the control computer.

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CSO: 2302/64

PROGRESS IN TECHNOLOGICAL COOPERATION WITH USSR

Sofia SOFIA NEWS in English 13 Mar 85 p 4

[Text] The CMEA economic summit held in Moscow in 1984 gave new cooperation guidelines. The creation of new joint firms, enterprises, corporations and other international economic bodies is another factor favouring the rise in CMEA efficiency. For some years now these cooperation forms have dominated the Bulgarian Soviet economic and techno scientific relations and this has been a constant proof of their progressive and beneficial character. In an interview for Bulgarian newsmen **Valentin Terekhov**, science and technology attache at the Soviet embassy in Sofia, explained things in greater detail.

Way back in 1975 the Bulgarian Soviet Electro instru ment Corporation for research and production was set up. It was given the task of developing and producing electrical in struments, electric motors and other sophisticated engineering units. The Bulgarian side was represented by the Elprom cor poration, while the Soviet by the Soyuzstroinstrument corpora tion. Five Soviet and four Bulgarian economic organizations were included in the project. A Coordinating Committee was set up with members representing both sides.

In the years since then, the Electroinstrument Corporation has been extremely active. Production has been specialized and integrated on the basis of the optimal use of the produc tion capacities, labour and material resources in both coun tries. Special attention has been paid to the steady increase in the volume of two way deliveries and to the rise in their quality and technology level.

At the end of last year the 15th session of the Elec troinstrument Committee was held and the reports submitted to the session revealed that the electric instruments delivery plans for 1984 were met as far as the instruments flow from Bulgaria to the USSR was con cerned, while the electric motor and spare part deliveries were still under way. Four hundred thousand electric motors were delivered on the whole. For its part, the Soviet Union met its obligations for delivering elec tric and pneumatic tools as well as complex assemblies and components to Bulgaria.

The production and economic cooperation is closely related to that in the sphere of science and technology. Joint programmes are being developed for the invention of electric machines with higher reliability and safety indexes. For example, last year the development of the new ED 212 electric motor was completed and it will serve as the basis for building new up to date multi purpose machines.

At present the Electroinstru ment Corp. is working on a long term programme for scientific and technological cooperation covering the period up to the year 2000. Figures characterizing the programme output show that Bulgaria will export one million electric motors to the Soviet Union in 1990. That is why the Elprom Works in the city of Lovech are planning to increase their production capacities.

The Electroinstrument Cor poration is not the only Bulgarian Soviet venture of this kind. Their number has reached ten so far. The big staff at the Bulgarian Soviet Inter programa Institute has produc ed satisfactory results. That in stitute was founded in 1977 with the idea of developing software for automated in dustrial management. So far 88 special application programme systems have been developed and handed over to the respec tive Bulgarian and Soviet agen cies. The projects of the institute have been implemented at more than 750 Soviet sites and the estimated profit is about 33 million roubles.

The staff at the Sov bolgartsvetmet agency set up at the end of 1978 to design high capacity flotation machinery and other types of ore processing equipment boasts promising results. In the last five years the agency has developed several models of flotation machines with various chamber volume parametres as well as different kinds of power ful pumps.

At present the formation of two more joint research and technology bodies has entered its final stage these will con centrate on the problems of powder metallurgy and welding robots. The latter project will join the efforts of Soviet Paton Arc Welding Institute and Bulgaria's Institute of Industrial Cybernetics and Robotics.

These institutes have already developed the RB 251 welding robot complex, currently manufactured by the Beroe Works in the Bulgarian town of Stara Zagora. The Soviet Union has already received 14 of these complexes.

The history of bilateral economic and techno scientific cooperation indicates that the consolidated efforts and use of resources in the form of joint production and scientific organizations can lead to a sharp rise in their efficiency, bringing them up to a new, qualitatively higher level.

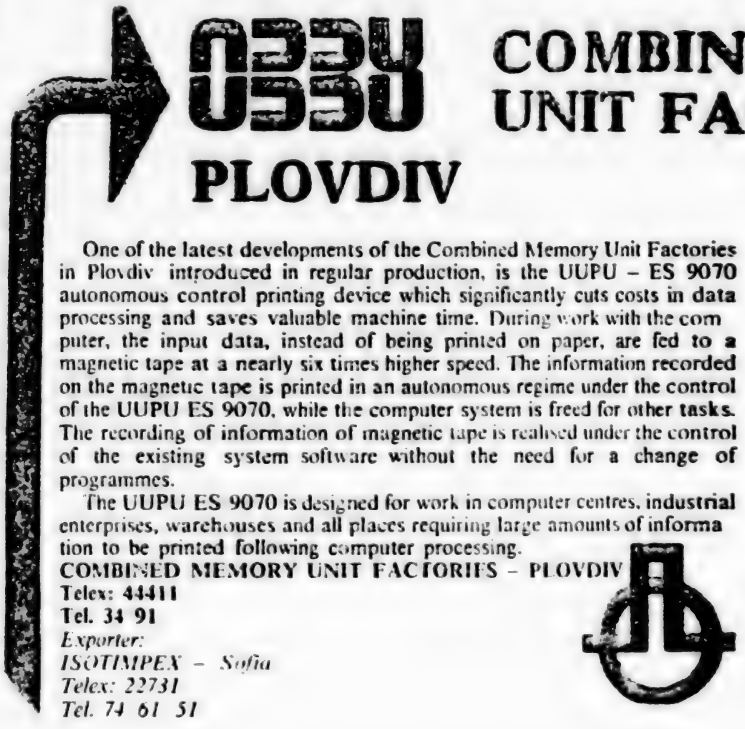
CSO: 2020/96

INTERNATIONAL AFFAIRS

NEW PRODUCT FOR COMPUTERS ADVERTISED

Sofia SOFIA NEWS in English 13 Mar 85 p 4

[Text]



CSO: 2020/96

COMPUTER PRODUCTS ADVERTISED

Sofia SOFIA NEWS in English 20 Mar 85 Special Supplement (Unnumbered)

[Text]

MEMORY DEVICES WORKS,

High quality data processing systems for the ESTEL tele-processing network (terminals, modems, video terminals, mini video terminals) and other RAM and operative-memory devices.

APPLICABLE to all areas of the economy are ESTEL 4.1 and ESTEL 4.2, an updated product featuring operative processor and virtual memory!

The devices manufactured by the Works

* FACILITATE man – machine-contacts;
* HELP increase the computers' calculating capacity;
* IMPROVE data processing in production management;
* RATIONALIZE on-the-spot data input and processing.

OTHER HIGHLY RECOMMENDED PRODUCTS include the ES 8501M terminal, the ES 8566 terminal station, the SM 1604 mini video terminal, and the ES 8531 programmable terminal.

New in 1985:

* SM 1704 PROGRAMMABLE TERMINAL STATION;
* SM 85•20 STATISTICAL MULTIPLEXOR for high-density telephone connections;
* CIRCULAR ADAPTER for terminal networks consisting of IZOT 8172 programmable terminal stations;
* SM 1604 MI mini terminal;

• SM 1604 M2 graphic mini terminal;
• ES 8566 TERMINAL STATION with graph-charting possibilities.

CSO: 2020/96

BULGARIA

SCIENTISTS DISCUSS STATE OF LASER TECHNOLOGY, URGENT PROBLEMS

Debate on Optical Electronics

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 pp 1, 3

[Text] Todor Zhivkov: "Metaphorically speaking, it is far more profitable for us to begin not with the discovery of the laser, but to start with its application and, as of that point, with proper additional basic research, to use it in a variety of areas. Such an approach to basic research will enable us to save time, effort, human resources and funds" (from the report to the February BCP Central Committee Plenum).

We were aware of the fact that in our country a number of scientific, scientific research, application and production units were working on laser and optical electronic problems. In our preparations for the meeting, we even had the problem of what units should be represented and would we risk omitting some of them. Although we had invited some 10 people, 16 attended the meeting with the editors. Clearly, interest in the problems to be discussed was much greater than we expected.

Inseparable Link

In his introductory speech, Academician Milko Borisov emphasized that "lasers and optical electronics are a difficult and complex area intersected by a number of scientific disciplines and types of activities." It became clear that optical electronics, an area in which our country has achieved real successes, reached its new stage of development only after the introduction of laser radiation. To broaden the problem, let us point out that, in the narrower meaning of the term, optical electronics is a more advanced stage in the development of microelectronics and the element base of new materials and some new technologies.

Let us try briefly to trace this connection in its historical development. To achieve this, let us find its roots in time, starting 20 years ago, when our noted physicists concentrated on lasers and when the Bulgarian Academy of

Sciences established the first specialized laboratories and a number of its institutes directed a great deal of their activities toward this fundamental scientific discovery; or else when the department of physics in Sofia University set up a chair on "quantum electronics," and its head, Docent Konstantin Stamenov, made truly apostolic efforts to train cadres and promote lasers among young people. It was then that laser systems, developed in the clubs for the technical and scientific creativity of youth, in which confident boys were drilling holes in tin plates, appeared. We believe these same boys to be today the leading specialists in our first plants engaged in the production of laser equipment and developing laser technologies and working in optical electronics....

In- and Outside Laboratories

The Svetlina NPSK [Scientific Production Economic Combine] in Sliven has created adequate conditions for the production of optical fibers, in terms of materials, raw materials and cadres. The combine has its own institute--the Institute on Sources of Light and Quartz--so that we may presume that the door connecting production and science is wide open. Furthermore, the view expressed by Kiril Vasilev, combine deputy director, who attended our meeting, was precise: "We are not working for the sake of development itself. We are working for industry and for end economic results."

However, as practical experience most frequently proves, the use of the results of a basic discovery--lasers being one of them--leads to new basic research. "All measurements involving optical fibers are in microns and parts of microns," Kiril Vasilev emphasized. "However, they are possible only with laser equipment and the use of lasers combined with more than computers...." Clearly, even this statement may be taken as a social assignment addressed to the sciences.

Conversely, at other times in the discussion, scientists "challenged" production workers: "But you know that in our Soviet State Physics Institute experiments have been conducted with crystals and certain results have been achieved...." We remain with the expectation that such reciprocal information gained in a meeting with the editors will mark the beginning of reciprocal activities on both parts.

Clarification of Positions

The dialogue and the discussion dealt less with the past and the present and was directed more and more frequently to the future. Every participant in this dialogue sought, above all, an answer to the question of what will be the future of lasers, laser equipment and laser technology and optical electronics. The question was bluntly raised by Stefan Stoilov, general director of the Scientific Production Optics Combine: "To develop an item based on laser or optical electronic principles is not difficult. The necessary materials can be found or imported. However, to organize production of such an item means to organize the project on the basis of major scientific developments and to involve our entire industry. This precisely is the path which we must and can follow..." Professor Paraskeva Simova went even further: "If we are guided by the competition's slogan," she emphasized, "our attention

should be focused on its final stipulation, that of reaching world standards. In this sense, it seems to me, we must determine our place in comparison with worldwide achievements and leading companies. Take the case of couplings. We have begun work in this area but have not achieved satisfactory results as yet."

Unquestionably, such views are influenced by practical experience. Here again, however, the new requirements interfere strongly with the way of thinking and the approach to the implementation of assignments. That is what Vladimir Ribarov probably had in mind in describing three aspects needed in assessing the world standards reached by laser or laser product: "The first aspect is that of technical indicators. We have many examples proving that our country has lasers and laser systems whose features are no worse than similar items produced abroad. However, this in itself does not mean that we have reached world standards. The second feature, which brings us closer to world standards, is the way in which our developments are received and should be received on the world market. Are we able to impose on that market the equipment and technology we have developed and have we met all the necessary prerequisites to this effect? The third feature is the race against time. We have no right to miss this train. Hence the need to determine the tasks to follow: Should we concentrate our efforts on products which will let us take positions in the international market on the basis of the existing material and technical foundations and technologies or should we develop a new base?"

Questions and Answers

It was natural for our discussion to touch upon one of the most sensitive problems--application! Research conducted in laboratories and institutes reaches a certain level of completion. Practical experience has proved that our concept of the scientist who is not interested in application has become entirely obsolete. "We relate application," Nikola Subotinov emphasized, "to the question of fast application. Our aspiration is to complete our developments in such a way as to make their transfer to production units easier. We at least have skilled and well-trained cadres--designers, electronic engineers and good mechanics. However, they are in short supply and we also need facilities. Nor do we have the necessary set of instruments on the state-of-the-art level. We must establish a small enterprise to deal with laser sources."

Obviously, the same problem has faced the collective headed by Corresponding Member Yordan Malinovski. However, his view was somewhat different: "For the past 3 years our laboratory has produced goods used by industry. In my view, however, this is not a boast but a subject of concern. The task of a laboratory of the Academy of Sciences should not be to produce something. We should not become a production unit but engage in production only to the extent to which we can develop and refine a given technology or equipment. Our job is new developments. A small enterprise related to our activities is necessary. Now, however, three trusts have rushed into opening such small enterprises.

"In my view, however, Bulgaria is not rich enough to have three such enterprises. Even a single one would be sufficient to meet the needs of the entire country three times over, so that we could even export items."

The ways to be followed, as the encounter made clear, are numerous and quite disparate, and so are the problems. Some of them were discussed in other published statements.

Statements by Attending Scientists

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 p 3

[Text] Corresponding Member Yordan Malinovski: "We know that our country is in a leading position in peripheral computer recording systems. However, we must resolve the following important problem: optical data recording. This is an urgent task for our science. Currently our country does not have an instrument which would estimate the ratio between signal and noise, the number of errors recorded, etc. This is an urgent problem whose time has come and passed and which requires taking quick measures even on the governmental level."

Senior Scientific Associate Candidate of Technical Sciences Marin Drazhev: "Optical fiber systems will enable us to resolve a number of technical, economic, social and ideological problems, such as telecommunications in the mail service, integral information services and cable television. However, we are still way behind in the development of systems the parameters of which would be consistent with contemporary requirements and, furthermore, would be competitive as well."

Candidate of Physical and Mathematical Sciences Rumen Kakanakov: "In order to ensure the even more dynamic development of our work in the field of lasers and optical electronics, we must abandon the classical way of combining the efforts of science and production. We need cooperation based on technology, at which point we would not find ourselves in a situation in which our country may have an expensive ion implanter which is not used at 100 percent capacity, on the one hand, whereas elsewhere several hundred discs cannot be implanted. The problem of molecular epitaxy is similar. This is a method used in growing monocrystal layers needed in optical electronics and laser equipment. However, the organization in charge of developing such a system and technology and producing epitaxially such layers for its own requirements should produce them for other organizations as well. In other words, such cooperation would save funds used to purchase expensive equipment."

Senior Scientific Associate Candidate of Physical and Mathematical Sciences Vasil Stefanov: "A new technical revolution is becoming apparent in our area. Some countries have already developed screens--flat displays--whereas, unfortunately, inertia in our country is still holding us back. Work should be undertaken on such fine semiconductor or gas displays. We have the necessary working conditions and areas of application. Attention should be paid to this matter now, before it is too late.

"The same could be said of laser chemistry, which is a promising area."

Academician Milko Borisov: "The comprehensive nature of optical electronics is manifested in the fact that currently ideas, scientific research, development, production and the market are very closely and inseparably interwoven.

The only obstacle to the development of very close ties among scientific workers and production units is subjective.

"In lasers and optical electronics as well it is very important to formulate a suitable selective scientific strategy, not once and for all, however, but a strategy which will be steadily enriched in accordance with worldwide achievements."

Senior Scientific Associate Metodi Kovachev: "What is the actual situation? Currently, most of the BAN [Bulgarian Academy of Sciences] institutes are allocated funds for their work more or less similar to those granted the previous year. This is done regardless of the fact that during the preceding year they worked on a few topics and in the year that follows the number of topics has quintupled. This mechanism for financing scientific research, in which funds are granted on a 'per capita' basis--if you employ thus and such a number of people that is what you get--neither stimulates nor could stimulate the development of science. Consequently, scientific management should include economic levers and be subordinate to a corresponding economic mechanism."

Candidate of Technical Sciences Stefan Stoilov: "The creation and production of laser equipment requires mastery of essentially new technologies and elements so far unavailable to us. We need new equipment and new materials. When we report the development of a new laser item, it should be known that it combines the scientific, technological and production standards of our country. The desire for contemporary laser equipment and that of attaining world standards is great and shared by all of us. However, this desire should be backed by a corresponding material facility, resources and cadres. We must systematically pursue our objectives and assignments. However, we should not kid ourselves that this is easy."

Candidate of Physical Sciences Georgi Zartov: "I was impressed by an internal contradiction which was manifested at our meeting as well: are we going to pursue the current level reached in lasers, laser equipment and laser technology and optical electronics or, along with pursuing today's standard, should we look 10 years ahead? Those in the production area support the former whereas my colleagues in the Academy of Sciences tend to support the latter. Would it not be best to find a sensible combination of both?

"Another question. Should we consider it applied only when a given item has been multiplied, i.e., when we have reached a high output? Should it not be considered as an application when the Academy of Sciences itself and its scientific units are producing items in small series and even in individual items which, however, contributes to the development of science which, in turn, helps the development of practical work?"

Fruitful Cooperation

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 p 3

[Text] The BAN Electronics Institute is our leading organization in charge of metrologically supporting laser and optical electronic production. It has

developed a number of methods to this purpose. Justifiably, however, the scientific workers object that they are not being used fully at the Svetlina Combine.

The time has come to produce a number of new types of fibers of the dispersion type, quartz-polymer, and others. Difficulties do exist: The systems now developed elsewhere are very complex and expensive. For this reason the people in Sliven did not promise to accomplish this in the near future. Passions "rose up," so that in the course of the discussion and the debates another valuable suggestion was developed for the Academy of Sciences and the industrial facilities to establish joint scientific-production laboratories which would shield the current gaps in the development and application of the items.

Items for Immediate Application

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 p 3

[Text] Lacquers for ultraviolet hardening are the basic method for improving the quality and mechanical properties of optical fibers. In the round-table discussion, the representatives of the Svetlina Combine in Slevin asserted that by the end of this year they will undertake the production of the very necessary optical fibers for a 1.3 micron wavelength. It has turned out, however, that attaining a quality consistent with requirements does not depend on them alone. Lacquers are needed but who is to develop and apply them?

This is an obligation of the chemical sector! The investigation we conducted at the ministry, however, did not yield anything encouraging. No such lacquers are being produced nor is anyone currently giving any thought to their creation. This is the first stage in application.

Media for holographic optical recording and hologram technology were developed several years ago at the Central Laboratory for Optical Recording and Data Processing of the BAN. Such media could be successfully used in optical memory as well. The scientists have suggested that a small production facility be set up at the laboratory, to meet the needs of the country and produce for export as well. For the past several years, however, this problem has remained unsolved. Who other than the laboratory could undertake to resolve it? Could it be the Bulgarian Photography TPO [Industrial Design Organization]?

Competition Suggestions

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 p 3

[Text] Suggestion No 19

Development: laser technology and apparatus for cutting glassware items.

Authors: The collective of the BAN Electronics Institute--Senior Scientific Associate Petur Atanasov, Scientific Associate Emil Pavlov, Physicist Yokhan Yotov and Specialist Foreman Ser'ozha Dimitrov.

Applied at: Kvarts Economic Trust--Stoyko Peev Glassware Plant, Beloslav.

Economic results: An original method for cutting glass with lasers with carbon dioxide, with a 150-watt capacity, in continuous action has been created. It is protected with two authorship invention certificates. The new method eliminates the need for a number of technological operations in the production of cups, drastically reduces rejects, releases workers and saves on electric power. Expected annual economic benefits: 500,000 leva per production line.

Suggestion No 20

Development: LT-001, 002 and 003 acupuncture and therapy lasers systems. The systems use helium-neon lasers in continuing and pulse modes.

Authors: Senior Scientific Associate Nayden Mikhaylov, Scientific Associate Orlin Vasilev and Scientific Associate Chavdar Gelev, all three from the BAN Electronics Institute.

Applied at: clinics and specialized medical offices at home and abroad.

Economic results: humanitarian above all. This equipment is used very successfully in hospitals in Sofia, Plovdiv, Pernik, Pleven and elsewhere. In addition to acupuncture, it is used for radiating various wounds and skin burns to assist their further healing. The development was awarded a gold medal at the Plovdiv Fair. Bulgarian laser systems have been exported to Brazil, the FRG, Nigeria and Italy, and a growing interest in it is being shown by many other countries.

Laser Application, Prospects

Sofia RABOTNICHESKO DELO in Bulgarian 6 Mar 85 p 3

[Text] Concluding speech by Aleksandur Aleksandrov, deputy chairman of the State Committee for Science and Technical Progress and chairman of the National Council for Optical Electronics and Laser Technology:

The meeting sponsored by RABOTNICHESKO DELO was exceptionally useful for two reasons. First: views were exchanged, recommendations were expressed and suggestions were made which could and will be useful in our further work. Second, some of the statements proved that not everyone present here was adequately informed of the work which is being done in the various scientific and production units in this strategic direction.

I should report that in addition to the National Council for Optical Electronics and Laser Technology, coordination councils for the basic subareas were set up in order to carry out the major and comprehensive assignments. At this meeting Academician Milko Borisov accurately emphasized that our country does not have the necessary possibility of developing and applying all of these areas. Nor is this necessary. Our approach is selective. The coordination councils discussed the development of their areas and formulated

their subprograms which the National Council, followed by the Council of Ministers, will review soon. Naturally, additions could be made to them, even on the basis of the suggestions submitted at this discussion.

The discussion was comprehensive. However, I would like to express one consideration. It is true that, unlike the other four national programs for technical progress, our program will begin to yield major economic results somewhat later. The development and application topics it includes cannot be completed within a very short time. However, even its very initial period includes problems which will be resolved in the very first years. In this manner, we are combining current production requirements and future scientific demands.

When we speak of unity and interaction among scientific units, industrial institutes and enterprises, we should perhaps use the slogan of the party organization in Sofia: "Institute-VUZ-Plant-Joint Counterplan." The time has come to abandon the concept of "helping the enterprise." We should speak of joint work; we should consider scientific research as part of overall developments; we should discuss scientific research which will subsequently become part of industry. The Academy of Sciences and the higher educational institutions must create science which must become a productive force. This means final economic results.

The question of frequent duplications in scientific and applied work in our area was raised quite sharply. The coordination councils have developed their subprograms in such a way as to reduce duplications to a minimum or even to eliminate them entirely. However, objectively speaking, some projects must be developed in several different areas in order better to assess results and determine who is ahead, and only then undertake to apply the most advanced development from the viewpoint of economic efficiency and technology.

I believe that it would be inaccurate, as well as impossible, to provide as of now answers to all questions raised in this meeting. The questions were quite specific and were raised with the concern and idea of their solution, the idea that their solution would lead to a general improvement in our work. That is why they will be reviewed and discussed by the coordination councils yet once again, so that they may be included in the subprograms. Should it be deemed expedient, they may also be included in the overall program of the National Council for Optical Electronics and Laser Technology. Naturally, this will be consistent with the economic possibilities of our country and our scientific and technical potential.

5003
CSO: 2202/14

CZECHOSLOVAKIA

NEW SCIENTIFIC CENTER ESTABLISHED

Prague RUDE PRAVO in Czech 6 Mar 85 p 4

[Article by Michal Strida: "A New Development Center for the Czechoslovak Academy of Sciences Is Being Organized"]

[Text] Several development units have been set up in the selected workplaces of the Czechoslovak Academy of Sciences [CSAV] in recent years. Their establishment is based on the resolutions of the 16th CPCZ Congress and subsequent plenary sessions of the CPCZ Central Committee. Their purpose is to apply as soon as possible everything good that is achieved in basic research to development and production and to social practice.

In the biggest CSAV workplace--the Physics Institute [FU]--a center was established whose purpose is to implement the achievements of mathematical-physical sciences. It was gradually built up, as they say, "on the march." Its basic orientation concept and personnel have been gradually built up during the last 2 years. At the present time, the emphasis is on the basic and sustaining programs in accordance with societywide interests.

The point at issue are three conceptual directions: the work group of microprocessor technology and unique equipment which is today--and this will be the case also in the future--engaged in the development and making of unique instruments for the detection of signals of acoustic emission. This involves extraordinary perspective diagnostic equipment which has been built in the most important industrial complexes in the technically most advanced countries for several years already. By means of such equipment data are continuously obtained on the operation and stress of major technological works, such nuclear power plants or large pressure vessels used in the chemical industry. Foreseeing minor failures may help avert hugh disasters and extraordinary economic losses. Acoustic emission equipment costs approximately $100,000-120,000, and in most instances an embargo applies to its export to the socialist countries.

The FU development center will be able in very short time to manufacture similar equipment with the component parts made in our country. The first will be delivered to the Skoda concern enterprise and other enterprises, for example, the Czechoslovak-Soviet Friendship Chemical Plants at Zaluzi near Most, Vitkovice Iron Works, Sigma national enterprise Modrany, have expressed interest in such equipment.

The workers of this group also make use of the lengthy experience acquired during the work on the Interkosmos program, where they participated in the development and construction of unique, very specialized computers which have been verified in practice with very good results.

The second direction is the development of CO_2 lasers. The institute will gradually develop a series of these lasers from low-efficiency (15 W) to 400 W ones. The practical application of development results in production has been secured by the establishment of a scientific-production association on the basis of the agreement signed by the CSAV FU and the Tesla Holesovice concern enterprise. The newly developed laser verified by the center will be turned over to production with technological documentation of such detail that unnecessary delays will be avoided. A concrete production program has been designed up to the year 1990. Their utilization is anticipated, for example, in the field of electronics in the cutting of ceramic plates and separation of individual chips, such as CO_2 scalpels for surgeons, and so on.

The third direction concentrates on the development and production of physical instruments primarily by making use of the materials developed in FU. This involves primarily materials with pyroelectric effect, that is, materials susceptible to electromagnetic radiation in the infrared spectral zone. This includes monocrystallic (triglycinesulfate and lithiumtantalate) or pyroceramic materials, particularly ceramics developed in cooperation with the Electroceramics Research Institute at Hradec Kralove. Tesla Lanskroun used this material in the production of the pyrodetector, which is one of the progressive new products among the component parts manufactured in this plant.

The pyroelectric phenomenon and its application in detectors is utilized on a very large scale in the world today and its significance can hardly be fully appreciated. According to head engineer Jan Zemlicka, the center will concentrate on the development of prototypes for contactless temperature scanning, which is used primarily in operations in which the temperature of technological equipment or momentary reactions has to be scanned continuously. This makes it possible to optimize the entire technological process retroactively. Some equipment has already been used, for example, in the Rubber and Plastics Institute at Gottwaldov, where the temperature of tire friction is scanned continuously--something which could not be measured with any method so far--or at the Moravian Electrical Engineering Plants in Mohelnice in the casting of electromotors manufactured there. The transportation field is also interested in these applications because it can use the contactless systems in securing the flow and safety of traffic.

These systems can also be used for signaling the entrance of undesirable persons into certain special areas, such as art galleries, museums, and so on.

Triglycinesulfate, which possesses the best possible pyroelectric properties, is used in special measurements of physical quantities in laboratories. Laboratory instruments for measuring low temperatures, in which there is interest in the capitalist states, are also being manufactured.

The workers of the center also want to build a solid material base in the area of infrared optics, whose results could be in case of need promptly turned over to industry.

The structure of individual work groups obviously depends upon the direction of implementation. In the area of microprocessing technology this will require the employment of college graduates, and the same applies to the development and production of CO_2 lasers. The implementation departments, however, will not be able to do without qualified craftsmen because they must rapidly react to everything new and rapidly introduce the required innovations. Their professional spectrum must be very broad in order to be able to adjust in a short time to the new conditions caused by the constant changes in development as well as the actual production program. The hiring of these highly qualified craftsmen and college graduates constitutes a serious problem which slows down the further development of the CSAV implementation base. An improvement in this respect can be expected from the experiment--the inclusion of the CSAV FU (including the implementation center) in the so-called scientific production units effective 1 January 1985.

A continuing deficiency in activity has so far been the lack of flexibility in the supply of small-volume materials and necessary electronic component parts, which not only causes delays in actual work, but sometimes curbs people's initiative. During its short existence, however, the implementation center has proved its justifiability and viability.

10501
CSO: 2402/8

CZECHOSLOVAKIA

CONFERENCE ON PREVENTIVE HEALTH CARE

Prague RUDE PRAVO in Czech 25 Mar 85 p 2

[Text] This Saturday marked the end of a 2-day conference on current tasks and problems of health care held in Prague by the health care workers of the Czech Socialist Republic. The conclusions of the 16th Plenum of the CPCZ set the health care service the basic task of putting all organizations, both production and nonproduction, to work on the most difficult and important problems in the environment and the workplace, demanding uncompromising fulfillment of these obligations. Particular attention must be paid to certain select industrial agglomerates and to certain activities which may have a negative impact on the environment. Health care has always played a preventive role in protecting human health, and this function will increase in importance and responsibility over time, since new manufacturing technologies, large-scale agricultural practices, and in general a changed way of life have both a positive and a negative aspect. At the conference it was noted that labor success depends on its efficiency. The health care service has certain powers, which it must use. But this requires an understanding of conditions, cooperation with responsible agencies, a high level of expert training, and above all consistency, sticking to what is right, even when this calls for the greatest efforts and work. Nowadays one health care worker cannot do anything alone but must work together with district officials and supervisors of economic workers who, because it is their obligation, want to and have to think of protecting public health when making any decisions.

The conference also dealt with skilled professional labor, and the fact that interest in studying at medical schools is not equalled by interest in actual field work in the health services. A young physician, male or female, begins work in the field, but shortly thereafter leaves for other employment, in a more attractive environment, although well-staffed health care service is required primarily in industrial agglomerates.

In conclusion, the conference participants voted in support of a declaration to strive harder to accelerate the application of research to health care practice and use theoretical knowledge in daily activity and in all areas of health care and epidemiology. They would attempt to fulfill all tasks assigned the health care service as well and as promptly as possible. And they would employ all their powers and all their knowledge in defense of peace, human happiness and health protection.

9832
CSO: 2402/9a

BRIEFS

NEW RADIOIMMUNOLOGY DIAGNOSTIC DEVICE--Kosice (CTK)--Faster diagnosis of hormonal activity in neonates by radioimmunological tests is possible using the JNG 401 16-detector measuring device, developed at the Kosice Institute for Radioecology and Utilization of Nuclear Technology. More than 40 of these devices have already been manufactured for the Czechoslovak health care industry. These new measuring devices are of a technical level comparable with similar devices manufactured in other countries. Radioimmune analysis (the so-called RIA-test) is becoming increasingly more popular in our country for the detection of hormones, infectious organisms, toxic compounds, and antibodies in the human organism. The single-detector automatic gamma-[ray] equipment used up until now in our central laboratories to evaluate these tests has proved inadequate to analyze all the samples collected in a day. The new device developed at the Kosice Institute eliminates this shortcoming and has the added advantage of computer processing of the data. This will allow physicians to make faster diagnoses and to begin effective therapy immediately, in the earliest stage of disease, preceding later basic institutional treatment. [Text] [Prague RUDE PRAVO in Czech 16 Mar 85 p 1] 9832

COMPUTERS FOR CEMA COUNTRIES--Zilina (CTK)--The Computer Technology Research Institute, headquartered in Zilina, plays an important role in planning and developing the system of small electronic computers in the CEMA countries, and is at the same time the coordinating center for this activity in the CSSR. Laboratories at this institute have developed and produced prototypes of 35 small electronic computer systems, and during the first 4 years of this 5-year period all of these have passed demanding international tests of the CEMA countries. Thanks to these favorable results of the institute's activity, the export of Czechoslovak computers has increased during the Seventh 5-Year Plan. More than 100 SM 4-20 computer systems have already been delivered to the CEMA countries. The highly-developed socialist labor initiative in the institute, an innovative spirit and the commitments of both decisionmaking teams and individuals have contributed to early completion of the most important tasks in the development of computer equipment. This has produced such results as shortening completion dates by as much as 18 months and accomplishing research and development beyond that called for by the plan, for example, the planning and manufacture of four models of personnel microcomputers in the PP line, vector-graphics videoterminals, and other devices of interest to the other CEMA countries. [Text] [Prague RUDE PRAVO in Czech 11 Mar 85 p 2] 9832

CSO: 2402/9a

HUNGARY

DECLINE IN RESEARCH, DEVELOPMENT RESOURCES NOTED FOR 1983

Budapest MAGYAR HIRLAP in Hungarian 12 Mar 85 p 7

/Article by "zador": "Research and Development 1983; Declining Personnel, Stagnating Sources, Central Statistics Office Report"/

/Text/ The Central Statistics Office recently published the most recent data available--pertaining to 1983--connected with scientific research and development. The picture which develops supports in full measure the anxieties which have been voiced in various forums by leaders of scientific research and technical development. Less has gone to research and development in recent years not only to the degree allowed by the restricted economic possibilities of the country but also less in proportion to these possibilities.

The publication details not only 1983 but also the period 1981-1983 when changes took place in the structure of R and D. On the basis of a resolution of the Council of Ministers the number of R and D institutions decreased to two-thirds; the "departing" institutions were transformed into developmental enterprises. But the number of research sites remained essentially unchanged because research continues in most of the developmental enterprises, for quality technical development was the purpose of their creation. In contrast to this personnel decreased drastically in the period under discussion, by 6,000 persons or by 7.1 percent; the number of researchers therein decreased by 1,000 persons or by 2.7 percent. The difference probably derives from the fact that the institutes preferred to give up auxiliary personnel rather than trained researchers. Thus the researchers must spend part of their work time on other tasks--for example, administration, acquisition, etc.--which almost certainly is to the detriment of the efficiency of research.

It is an interesting datum that the number of those with scientific degrees at the research and development sites increased by 8.6 percent--today every 7th researcher is so classified--and this number increased by 20 percent among those working at nonresearch sites. This is primarily a consequence of retirement and almost certainly means that a significant proportion of the researchers taken on in the period of extensive development have reached retirement age and while under other circumstances they would have continued working, now, understanding the problems of the institutes connected with personnel reductions, they have voluntarily given up their places.

Between 1980 and 1983 expenditures increased by a total of 7.3 percent, which means an annual increase of about 2.5 percent. Calculating with comparable quantities the investments carried out in other spheres in this period increased by eight percent (!) per year, so the R and D sphere doubtlessly fell behind. Only the operational expenses increased considerably; investment fell to the lowest level of the preceding (!) plan period and decreased until 1983. This applies especially to machines and equipment which can be obtained for dollars. The tightening up affected basic research more than the average; the ratio for it, which is low in any case compared to other R and D activity, decreased further.

R and D activity declined in agriculture and the foodstuffs economy, but less so in industry where the most institutes were transformed into developmental enterprises. In the period under discussion the obligatory generation of a technical development fund was ended in many places; the enterprises did generate funds despite this but as a whole less money went to research and development.

R and D expenditures at current prices increased by a total of 0.6 percent in 1983, the sum stagnated in some places and increased dynamically by 10-15 percent in others, but since this took place after the stagnation of 1982 the situation is essentially unchanged in comparison to that of 1981.

Prior to last year about 50,000 fulltime workers--22,500 of them researchers--were active in the R and D sphere. There were 1.36 themes or 1.01 articles per researcher--10 percent more than in 1982--and the quality of these improved, there were many foreign publications. The number of themes cultivated within the framework of international cooperation decreased and this affected primarily cooperation within CEMA. The number of foreign trips increased by about three percent but since the central sources did not increase job possibilities and personal contacts are playing an ever greater role. The researchers travel primarily to conferences and to exchange experiences. The ratio of more prolonged visits did not reach 3 percent in the socialist countries while in other countries the longer visits represent 15 percent.

The number of innovations and patents increased somewhat and while about 33,000 of the 37,800 themes completed in 1981-1983 were applied research or development and while this meant some sort of application in 27,200 cases, there was no significant change in the speed of introduction.

At the moment the data for last year are not known and only about 1 year remains in this plan cycle. Hopefully greater sums than at present will go to research and development in the next plan cycle, if not before.

8984
CSO: 2502/32

POLAND

RUNDOWN ON NEW FREIGHT CAR UNLOADER, ALL-PURPOSE CONTAINER

Warsaw PRZEGLAD MACHANICZNY in Polish No 24, Dec 84 pp 20-21

/Text/ The manufacturing plant of Orzesz Jaskowice, a subdivision of the Zremb Combined Machine-Building Works for Housing Factories in Gliwice, manufactures WW-205M freight car unloaders for removing loose and granulated materials, including sand, gravel, crushed stone, coal, and ore with granulation not exceeding 400 mm, from uncovered railcars. The unloader is of special usefulness in large industrial plants, where substantial quantities of materials are delivered and must be efficiently and smoothly unloaded.

The unloader is a mobile device, traveling on its own rectilinear track laid alongside the rail track and equipped with two adjustable belt conveyors. A belt conveyor consists of a frame, power wheel and a stretching wheel, sets of carrier rolls and a hopper. The structure of the hopper permits the adjustment of the chute to the width of freight car doors.

The conveyors can be moved lengthwise on the loader by means of a sliding mechanism. An adjustment screw on this mechanism, powered by a gear reducer, causes the conveyor to travel along its guide bars through the action of a nut coupled with the frame. A linear mechanism for conveyor adjustment permits the placement of the belt at the desired angle, to match the physical properties of material and conditions of operation.

The unloader's bearing structure is a gantry (three-dimensional truss, welded from sections and covered with a corrugated plate roof) with an underslung mobile bridge, suspended on four cables guided inside the channel bars of leg supports. The bridge hoisting mechanism consists of an engine, two cable drums mounted on transmission takeoff shafts, and a set of cable pulleys. The bridge is stopped at a desired height by means of a shoe brake.

Three underslung sweepoff baffles, two longitudinal and one transverse, travel bridge-mounted carriages. The power mechanisms of the longitudinal carriages, consisting of an engine and transmission, are meshed with the racks of the bridge structure. The operation of longitudinal sweepoffs can be synchronized or individually controlled. End positions for the carriages on the bridge are determined by limit switches, but the carriages can be stopped at any point. Once the longitudinal sweepoffs reach the transverse one, their motion is automatically arrested. The longitudinal sweepoff baffles move cargo to the center of the freight car, and the transverse baffle pushes it out through the car door.

The transverse sweepoff operates horizontally and vertically by means of a mechanism composed of an engine, a gear train, and chain transmissions. It can be adjusted for one-sided unloading (dead movement occurs with the sweepoff raised above the cargo) or two-sided operation in which the sweepoff is not lifted (motion in either direction is a working movement).

The unloader is equipped with a cubicle mounted on the gantry support leg that houses the controlling and monitoring devices, and a lighting system which permits operation at night.

Technical specifications of WW-205M freight car unloader:

type of unloader: mobile
capacity in unilateral operation: 30-80 tons per hour
capacity in bilateral operation: 60-200 tons per hour
freight car load capacity: 24 tons and 60 tons
unloading time for a 24-ton car: 7 minutes
maximum spacing of longitudinal sweepoff baffles: 9.2 m
speed of travel of longitudinal baffles: 4.9 m/min
speed of travel of transverse baffle: 41.0 m/min
bridge lifting speed: 3.5 m/min
loader travel speed: 21.0 m/min
conveyor belt speed: 78.0 m/min
total power installed: 66 kW
supply voltage: 380/220 or 3 X 500 V
number of operators: 3
weight: 32,500 kg

* * *

The 1AA-4001KKb all-purpose container manufactured by the Swidnica Rail Car Factory in Swidnica is designated for transporting unit cargo by water, rail, and road. Its structural frame is made in keeping with the ISO standards, mandatory in container design. The structural material is a low-alloy steel with elevated durability and greater resistance to corrosion, type 18G2ACu with the yield point of R_e=355 MPa, and type 10HA with the yield point of R_e=340 MPa.

The container is composed of the following elements:

--a bottom frame, made of rolled and cold-formed sections, allowing clearance for the coupling saddle;
--side walls and a front wall of 1.5 mm and 2.0 mm thick riffled plate;
--a roof of 2.0 mm thick plate stamped with nonpenetrating riffle bars;
--a floor made of 30.4 mm thick special plywood impregnated with Basileum SPI, covered in the door area with zinc-coated plate 2.5 mm thick and 400 mm wide;
--watertight double door, rubber sealed, with Blair system, model DL and CS locks (the angle of opening of each door leaf is 270°).

The container can withstand loads specified in ISO standard 1496-I. The floor structure can resist the impact of a 7,260 kg cart (1.33 X mass, according to ISO).

Technical specifications of 1AA-4001KKb all-purpose container:

outside dimensions: 12,192 mm by 2,438 mm by 2,591 mm
inside dimensions: 12,018 mm by 2,335 mm by 2,384 mm
dimensions of door opening: 2,338 mm by 2,228 mm by 2,288 mm
distance between floor and base: 150 mm
load capacity. 66.9 m^3
net weight: 26,580 kg
gross weight. 30,480 kg

8795
CSO: 2602/20

POLAND

BRIEFS

NEW MINIATURIZED THERMOCOUPLE--A miniaturized multicomponent thermocouple (detector TD 002) was manufactured at the S. Kaliski Plasma Physics and Laser Microsynthesis Institute. It is made by vapor condensation on a sapphire substratum of bismuth and antimonium. The element is sealed airtight and equipped with what is known as a transmission window. Because of the absorptive coating on its sensitive surface, the thermocouple is a nonselective detector of radiation within the 0.25 micron through 25 micron range. The detector simultaneously generates a voltage signal and requires no external polarization. Its principal features are: the number of junctions--32, face-plate surface--0.2 mm^2, resistance--10 k/max 12 k, voltage sensitivity--5000K, DC/8...10V/W, time constant--50 ms. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 24, Dec 84 p 1/ 8795

ALUMINUM SMELTER CLOSED--The Metallurgy Plants of Skawina have totally abandoned aluminum smelting because of the ecological damage caused by this production. Skawina has become a reprocessing plant, producing aluminum alloys from scrap and wire rods for the cable-making industry. Its annual processing capacity is approximately 35,000 tons for all types of products. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 24, Dec 84 p 1/ 8795

LASER GUIDED EXCAVATOR--A laser control system for the K-611 excavator was developed by the Industrial Optics Center. It is designed for compatibility with single-bucket hydraulic excavators, permitting high-accuracy excavations to be made at desired depths and bottom inclinations. Such excavators, equipped with a forming bucket and a laser control system, are primarily used in land reclamation. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 24, Dec 84 p 1/ 8795

SHIP HULL SPLICING--The Gryfia Repair Shipyard specialists in Szczecin have become expert at splicing ship hulls. This seemingly simple operation requires overwhelming accuracy and high quality of performance. Up to now, Gryfia has spliced eight vessels, mostly under the West German flag, and increased their load capacity. The most recent operation involved the "Nordfeld" from West Germany, extended by splicing by 8.4 m. /Text/ /Warsaw PRZEGLAD MACHANICZNY in Polish No 24, Dec 84 p 1/ 8795

NEW PHOTOSENSITIVE FILM--The Chemik cooperative in Czestochowa has begun to manufacture a multipurpose photosensitive film. The film is as sensitive as

photographic paper and reproduces precisely and contrastively any drawing when exposed to solar or other types of light. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 24, Dec 84 p 1/ 8795

NEW OXO ALCOHOLS PLANT--Poland's largest and most advanced chemical industry production plant, now under construction at the Nitrogen Plant at Kozle-Kedzierzyn, will make oxo alcohols, octyl and butyl, both indispensable semiproducts in the manufacture of paints, varnishes, plastics and rubber. They will be made under a license for an advanced technological process developed by Davy Power Gas and Johnson Matthey Company, Great Britain, and Union Carbide, United States. All the equipment will be supplied by the Zimmer company from the FRG, and the general contractor is the Opole Industrial Construction Enterprise No 1. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 1, Jan 85 p 1/ 8795

'CAMAC' ELEMENT PRODUCTION--The Zielona Gora Polon enterprise has began manufacturing "Camac" digital blocks, assemblies of electronic elements with specified functions which can form part of appliances used in many fields, including medicine and space research. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 1, Jan 85 p 1/ 8795

SATELLITE GROUND STATION IMPORTS--The Unitra company recently signed a contract to import two satellite ground stations in the Inmarsat system from Japan. The maker is the NEC company, and Mitsui Co is a commercial partner in this transaction. The new stations will be emplaced in the vicinity of Psary, near Kielce. Via stationary satellites above the Atlantic and the Indian Ocean, they will ensure radio and telephone communication with Polish ocean-going commercial and fishing vessels, substantially improving contact. /Text/ /Warsaw PRZEGLAD MECHANICZNY in Polish No 1, Jan 85 p 1/ 8795

CHEMICAL PLANT EXPANSION--A plan to modernize technological progress. New continuous-operation vacuum evaporators for sodium dichromate and sodium sulfide will be designed in 1984 at Alwernia Chemical Plant. The design of an installation for chromium oxide will also be initiated. Implementation is anticipated to follow some time after 1985, but draft design is already in progress, as is a project involving the extraction of sodium sulfate from transchromic sulfate. The benefits, aside from the product thus obtained, will include elimination of the problems caused by the emergence of transchromic sulfate dumps. The most important undertaking of 1984 has been the startup of production of a sodium-potassium polyphosphate mix (equivalent to what was known as "hamina") until recently imported from Holland and widely used in the meat industry. /Text/ /Warsaw PRZEMYSL CHEMICZNY in Polish No 10, Oct 84 p 553/ 8795

NEW PENTAERYTHRITOL PROCESS--Construction of an installation for making pentaerythriotol (used in the production of phthalo varnishes) will begin in the third quarter of 1984. The production technique has been developed at the ICSO Blachownia in Kedzierzyn-Kozle. It is a modern method based on domestic raw materials. Until now, all pentaerythritol has been imported. /Text/ /Warsaw PRZEMYSL CHEMICZNY in Polish No 10, Oct 84 p 553/ 8795

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